Effectiveness of Non-Invasive Intervention on Anterior Uterocervical Angle in Primary Dysmenorrhea Patients: A Randomized Controlled Trial.

प्राथमिक कष्टार्तव के रोगियों में पूर्वकाल के बीच के कोण पर गैर इनवेसिव हस्तक्षेप की प्रभावशीलता: एक यादृच्छिकीकरणनियंत्रण परीक्षण।

Synopsis submitted to

Maharishi Markandeshwar (Deemed to be University) Mullana, Ambala, Haryana India

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Mullana, Haryana, India

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Submitted by:

Sunita Sharma:

Roll No. 202003 Registration No-19-Ph.D batch-070

Supervisor:
Dr, Vandana Esht
MSPT, Ph.D ,
Associate Professor MMIPR, MM (DU)
Mullana-Ambala

Co-Supervisor:
Dr. Harneet Narula ,Professor,
MD. (Radiology),
MMIMSR, MM (DU) Mullana-Ambala

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ABSTRACT

Objective: the aim of the study is to assess the Utrocervical angle changes and cervical length screening by sonography once four cycles of non-invasive physical therapy management in patients with primary dysmenorrhea.

Methods: The randomised controlled trial are going to be conducted on forty six females between the age of 16-35 years (sample size calculated by G* power software package version three.1.9.4) with primary dysmenorrhea are going to be recruited from tertiary care hospital of gynaecology patient department. Participants are going to be at random allotted into 2 teams exploitation block organisation, control group can receive home program exercises with deep respiratory, music therapy, stretching, and core strengthening exercises and also the intervention groups can receive set of six completely different treatment embrace female internal reproductive organ manipulation, cranial stimulation ,music therapy, deep respiration stretching and core strengthening exercises program for four cycle (one week for every cycle 2 days before periodic date once every day, for one hour). Baseline and posttest examinse are going to be done by diagnostic sonography for cervical length, longitudinal axis and vertical axis of cervix uteri and for pain intensity exploitation Visual Analog Scale(VAS) and for anxiety and depression level DASS21 and international physical activity form assessment tell us level of physical activity throughout amount time.

Result: information are going to be calculable by the SPSS statistical software package sixteen.0. Normality are going to be check by Shapiro-wilk take a look at and if the info can follow the conventional distribution then constant take a look at are going to be used among the group i.e. continual live multivariate analysis and between the group independent t-test and if not unremarkably distributed then non-parametric are going to be used among the group i.e. {friedman test|Friedman test|rabbit test|pregnancy test} and Mann-Whitney U test between the group.

Conclusion: Study indicates the impact of non-invasive physical therapy management on psychological issue, fitness, also as on severity of pain which will assessed the narrow of anterior Uterocervical angle by diagnostic sonography in longitudinal and vertical axis.

Keywords: primary dysmenorrhea, sonography, Uterocervical, Non –invasive, Pain.

INTRODUCTION

Primary Dysmenorrhea is one of the frequent gynecological alterations, especially in adolescents and young females(1).There is association of menstruation with abdominal pain, cramping, lumbago, activity limitations, and decrease in quality of life and 77.3% of respondents had low physical activity(2). The menstrual cycle begins with the first day of bleeding, which is counted as day one. The cycle ends just before the next menstrual period. Menstrual cycle usually lasts 28 days with bleeding period of 3 to 7 days(3).There is reduction of dysmenorrhea in women who used to do exercises on regular basis and it may be due to effects of changes in hormones which causes changes on uterine epithelium and increased levels of endorphin(4).

The etiology of dysmenorrhea is unknown but in some cases the hormonal misbalance of prostaglandins in uterine wall is seen (2). The type of pain is much related to periodic nature, because it's intensity and inefficiency is very high. So some females seek medical help (5). Dysmenorrhea indicates other biological symptoms also such as vomiting, fatigue, nausea, diarrhea, lower back pain and headache, all these symptoms are seen before and pain. According to streamline the incidence of primary dysmenorrhea ranges from 45% to 95% particularly 75% in representative females and 10% patients suffering from severe symp during period time (6). Dysmenorrhea is arranged into two kinds: essential and optional. Essential dysmenorrhea is portrayed as difficult menses among females with ordinary pelvic toms, resulting in incapability which lasts up to 1 to 3days each menstrual cycle (7).

There is a wide variety in the estimation of dysmenorrhea from various studies around the world which reports a range between 28% and 71.7%.In some studies it was also found that prevalence of dysmenorrhea has been accounted for to be somewhere in the range of 58.2% and 89.5 % (8).

Dysmenorrhea affects more than 50% of menstruating females with 10-12% of them are having severe dysmenorrhea which lasts for 1-3 days every month as the young females contributes a major percentage of the adult work in United States, approximately 600 million working hours or 2 billion dollars are lost annually because of incapability and inadequate relief in dysmenorrhea. Females who carry on their work or attend the classes have shown decreased output of scores and work during their dysmenorrhea.

In the age between 20-24 years dysmenorrhea is very common in females with most severe episodes occurring at the age of 25 years. Smoking, overweight, long menstrual periods are the associated factors that increase the duration, risk and severity of dysmenorrhea in females. Primary dysmenorrhea most commonly occurs between 6-12 months after menarche. Female adolescents suffering from dysmenorrhea feel the first painful

menstruation within first 2 years after menarche (9, 10).Embryologically the paramesonephric ducts (Mullerian ducts) gives rise to uterus which proliferates and differentiate and develops fallopian tubes, uterus and upper one third of the vaginal canal. In the process of endometriosis, the tissue of endometrium spread from the uterus to the related pelvic organs like ovaries and fallopian tubes. Deep infiltrating endometriosis is explained as the presence of implants of endometriosis embedded 5 mm underneath the peritoneum which is an indicator of the criticality of ache in the women with this disorder(11) Girls with this sickness who underwent a surgery to dispose of deep infiltrating endometriosis lesion revealed in a retrospective observational take a look at that maximum women with this sort of situation continually gives with specific varieties of pelvic pains and maximum common area of pain is bowl accompanied with the aid of pain within the uterosacral ligaments. Avail et al. located similarly that deep dyspareunia became related in large part with vaginal and rectovaginal septum deep infiltrating endometriosis, with dysphasia related closely to adhesions in cul-de-sac. Deep infiltrating endometrosis is associated with the involvement of bladder, uretral and urinary tract and its prevalence is 6% in females with pelvic endometrosis (11).

Menstrual cycle is intricate and constrained by a wide range of organs and the hormones that these organs produce the four periods of the menstrual cycle are monthly cycle, the menstrua the follicular stage, ovulation and the luteal stage. Basic menstrual issues incorporate overwhelming or difficult periods and premenstrual symptoms (PMS). There are five stages in an ordinary menstrual cycle: Draining stage, Pre-fruitful stage, Fruitful stage, discharging an egg (ovulation), Post-fruitful phase (12).

Menstrual blood and tissue stream during the month to month menstrual cycle, the uterus arranging works to plan for pregnancy from the uterus through the small opening in the cervix and drop of the blood through vagina. In the event that the pregnancy does not occur, estrogen and progesterone hormone levels start falling. The middle term of a menstrual cycle is 28 days with most cycle lengths between 25 to 30 days. The menstrual cycle might be isolated into two stages- follicular or proliferative stage, and the- luteal or secretory stage. The follicular stage starts from the principal day of menses until ovulation. The Ordinary Menstrual Cycle and the Control of Ovulation - Monthly cycle: The period—the shedding of the uterine coating. Levels of estrogen and progesterone are low. The follicular stage: The time between the main day of the period and ovulation Estrogen ascends as an egg plans to be released (13). The menstrual cycle is mind boggling and is constrained by a wide range of organs and the hormones that these organs produce. A mind structure called the nerve center makes the close by pituitary organ produce certain synthetic concoctions, which brief the ovaries to deliver the sex hormones estrogen and progesterone. The menstrual cycle is a biofeedback the follicular stage starts the fundamental day of female cycle and gets done with ovulation. Impelled by the operational hub, the pituitary organ releases follicle animating chemical (FSH). This chemical empowers the ovary to make

around five to 20 follicles (little handles or wounds), framework, which implies each structure and organ is influenced by the action of the others.

Which dot on a superficial level. Every follicle houses a juvenile egg. Normally, just a single follicle will develop into an egg, while the others bite the dust (12). This can happen around day 10 of a 28-day cycle. The development of the follicles invigorates the covering of the uterus to thicken in anticipation of conceivable pregnancy. Ovulation is the arrival of a develop egg from the outside of the ovary. This normally happens mid-cycle, around fourteen days or so before period begins. During the follicular stage the developing follicle reasons an ascent in the degree of estrogen. The nerve center in the cerebrum perceives these rising levels and discharges a synthetic called gonadotropin-discharging hormone (GnRH). This hormone prompts the pituitary organ to deliver raised degrees of luteinizing hormone (LH) and FSH. Inside two days, ovulation is activated by the elevated levels of LH. The egg is piped into the fallopian tube and toward the uterus by floods of little, hair-like projections. The life expectancy of the normal egg is just around 24 hours. Except if it meets a sperm during this time, it will pass on. At the point when you need to have an infant you can improve your opportunity of getting pregnant in the event that you think about ovulation and the 'prolific window' in the menstrual cycle. Peruse more on ovulation and fruitfulness window (13).

During ovulation, the egg ejects from its follicle, yet the burst follicle stays outwardly of the ovary. For the accompanying fourteen days or something like that, the follicle changes into a structure known as the corpus luteum. This structure starts releasing progesterone, close by restricted amounts of estrogen. This blend of chemicals keeps up the thickened covering of the uterus, believing that a treated egg will stick (implant). If a readied egg embeds in the covering of the uterus, it conveys the chemicals that are critical to keep up the corpus luteum. This fuses human chorionic gonadotropin (HCG) (14).The corpus lutein continues delivering the raised degrees of progesterone that are expected to keep up the thickened covering of the uterus. In the event that pregnancy doesn't happen, the corpus luteum shrivels and passes on, normally around day 22 out of a 28-day cycle. The drop in progesterone levels makes the covering of the uterus fall away. This is known as month to month cycle. The cycle at that point rehashes

The regular menstrual issues which the female faces are premenstrual condition (PMS) in which hormonal occasions before a period can trigger a scope of reactions in ladies in danger, including liquid maintenance, cerebral pains, exhaustion and fractiousness. Treatment alternatives incorporate exercise and dietary changes (13). The uterus is provoked by specific hormones to crush more diligently than would normally be appropriate to unstick its covering. Treatment choices incorporate torment mitigating prescription and the oral preventative pill. Overwhelming menstrual dying (recently known as menorrhagia) whenever left untreated, can cause weakness. Treatment alternatives incorporate oral contraceptives and a hormonal intrauterine gadget (IUD) to direct the stream. Amenorrhea

or nonappearance of menstrual periods viewed as irregular, with the exception of during pre-adolescence, pregnancy, lactation and post menopause. Potential causes incorporate low or high body weight (14).

Primary dysmenorrhea is related to abnormal and increased levels of eicosanoid and possibly prostanoid secretions which leads to the abnormal contractions of the uterus. These contractions in turn decreases the blood flow to uterus ultimately the uterine hypoxia occurs. The increase in levels of prostanoid secretions is the main cause for the etiology of primary dysmenorrhea as the abnormal. uterine constrictions and antagonistic impacts are seen in prostaglandin incited fetus removal and work (15) Uterine pressure may reach beyond 60mm Hg due to the uterine contractions which may last many minutes.(16)This condition usually begins within 6-12 months of menarche when the ovulatory cycle is established. The symptoms related to primary dysmenorrhea are vomiting, nausea, diarrhea which are the adverse effects of increased prostaglandin secretions (17).

Primary dysmenorrhea notably had many negative effects on females because it hampers daily activities of living. In female students the learning capability is interrupted, the study focus is reduced and females get uncomfortable and motivation is reduced. (18) Approximately 50-70% females have symptoms of dysmenorrhea in some moment of life which hampers their activities of daily living. Many treatments are proposed for dysmenorrhea which include non-steroid anti-inflammatory drugs , vitamins , oral contraceptives but a different treatment options which are non-invasive in nature like physical therapy , cranial electrical stimulation, visceral osteopathy, stretching, music therapy, strengthening exercises and breathing exercises can be incorporated for improving the pelvic floor organ functioning by adjusting the proper blood flow, metabolism and promotes analgesic effect by means of endogenous mechanism.(19)

There is growing evidence of psychological etiology in the females suffering from dysmenorrhea and tend to have greater negative attitudes towards this illness than normal menstruating females. Dysmenorrhea females are not satisfied with their body appearance which leads to deterioration of their mental health. There is high emotional disturbance, anxiety and somatic complaints associated with dysmenorrhea (20).Cranial electrotherapy stimulation (CES) is non- invasive electrotherapy treatment that has been shown to decrease the anxiety, depression, insomnia significantly. CES decreases the delta activity which helps in reduction of fatigue, increases alpha activity which induces relaxation and decreases the beta activity which reduces the negative thought process. CES can be used in combination with medications, biofeedback and hypnosis to decrease the anxiety in patients (21).

The mental health and social health of females is severely affected by dysmenorrhea. The females with this condition often fail to do their activities of daily living which results in impaired quality of life in them. There is very close relationship of pain and depression.

Levels of anxiety and depression are associated with pain of many types which includes dysmenorrhea also. The depression enhances the pain on social and occupational level and decreases the response to medical therapy (22). Dysmenorrhea is accompanied by premenstrual syndrome (PMS) with wide spectrum of behavioral alternations which includes withdrawal from jobs, reduced functional activities and social activities; crime related behaviors and increased suicidal tendencies. The goal of the music therapy is managing the symptoms so that patient can function properly during this period of time. Music therapy helps in maintaining, sustaining and improving physical and mental condition status of the patients and enhances alternations in patient's behavior and emotions. Music therapy is effective in treating various disorders of depression, anxiety, mood swings and alleviating travail during labor. Listening the meditational music also helps in alleviation of PMS symptoms (23).

Chronic pelvic pain in dysmenorrhea is common unresolved healthcare problem in female patients. In dysmenorrhea menstrual cramping pain is not associated with any pelvic pathology (24). It has negative impact on female population and the health care facilities are barely consulted for the possible solution of this condition. The pathophysiology of this condition is related to increased levels of prostaglandins associated with myometrial smooth muscle contractions and hypoxia to uterine arterioles. There is correlation of dysmenorrhea and central sensitivity of pain. Number of evidences and researches show the effectiveness of osteopathy manipulative therapy on pain and reduction of circulating plasma levels of prostaglandins, inflammatory signals and cytokines. Osteopathic-manipulative treatment efficiently relieves pain and improves quality of life of females suffering from dysmenorrhea. It significantly decreases menstrual pain intensity, decreased intake of NSAIDS, decreases hours of absence in school going and working females and in this way reduce the huge socio economic impact of dysmenorrheal (24).

Dysmenorrhea causes cramping and pain in lower abdomen and is concentrated in suprapubic area and may radiate to lower back, buttocks and upper thighs. Primary dysmenorrhea is not life threatening condition but it leads to significant effects on quality of life. The pain caused is relieved by various medications which affects the levels of prostaglandins but are associated with number of side effects which includes nausea, breast tenderness, vomiting, dizziness, intermenstrual bleeding. Exercise therapy can be suggested as non-invasive approach for the treatment of various symptoms associate with dysmenorrhea. Exercise reduces the severity and frequency of symptoms in dysmenorrhea. The females menstrual cycle because of its analgesic effect In dysmenorrhea the reduced in size ligamentous bands who partook in customary exercise program had less torment and conduct changes than non-exercisers during within the stomach vicinity grow to be the causative aspect for the compression of nerve pathways which results in their inflammation so the proposed collection of exercise therapy like stretching exercises was considered to be very effective as it significantly increases the blood flow to the uterus and leads to reduction of menstrual symptoms.

Core strengthening is very useful in stressful times of dysmenorrhea as the lumbar portion of spine is erect and intended to take power of the body and is related with various beginning and inclusion of muscles and nerve innervations to their contralateral region. The weak lumbar spine is not able to handle functional stress which leads to pain in the abdominal area, lower back area or sometimes thighs which are the same areas that are affected in female population suffering from dysmenorrhea. Core strengthening allows the intrinsic muscles of lumbar spine for conditioning and improves the performance by allowing the isolation of these muscles (26). The strong musculature of core is more prepared to handle the normal forces of biomechanics as well as when the body is under stress of menstrual cycle (27).

The selection of deep breathing for handling and control of dysmenorrhea is because of its emotional and psychological advantages. The stress created in dysmenorrhea is alleviated as the deep breathing exercises provide positive experience, reduce tension, fear and reduce pain without the administration of drugs and prevents complications. Deep breathing exercises reduce the intensity of pain, increases oxygenation of blood, and increases pulmonary ventilation (28).

The past study showed that Primary dysmenorrhea was the origination of painful menstrual cramps in the uterus without pathology, the aim of investigation was to notice the effect of foremost Uterocervical point on essential dysmenorrhea and its concern with the severity of pain. During period time the author was investigating the pain severity by the Uterocervical angle measurement. The Uterine corpus longitudinal axis, uterine corpus transverse axis and uterine cervix longitudinal axis were similar. Study results show that the narrow anterior Uterocervical angle were associated with primary dysmenorrhea and pain severity. Study concluded about the severity of pain. The Uterocervical angle decreased as pain severity increased and by increasing the Uterocervical angle the pain severity decreased (29).

1.1 Statement of the problem: Although Primary Dysmenorrhea is a self –limiting condition, it has negative impact on quality of life of sufferer. It has not been a priority topic for the researchers even after being a common problem in our society. So the present research has the purpose to act as a bridge and fulfill limitations and research gaps of earlier researches.

1.2 Research Question: What is the effectiveness of Non-invasive intervention on Uterocervical Angle in Primary Dysmenorrhea Patients?

1.3 The need of the Study: There is scarcity of literature addressing effective conservative management of primary dysmenorrhea. Past studies had not included interventions for management of both mental and physical factors associated with primary dysmenorrhea. Hence current study design has been structured to provide non-invasive intervention in primary dysmenorrhea patients.

1.4 Aim: The study aims to identify the Effectiveness of Non-invasive intervention on Anterior Uterocervical angle, reducing pain and improving the quality of life in primary dysmenorrhea patients.

1.5 Objectives:

1) To identify the prevalence of primary dysmenorrhea cases among medical university students in association with their physical activity levels.

2) To find the effectiveness of Non-invasive intervention on Anterior Uterocervical angle, reducing pain and improving the quality of life in primary dysmenorrhea patients.

1.6 Hypothesis:

Alternate Hypothesis: There will be significant difference between experimental intervention and conventional intervention on anterior Uterocervical angle and in reducing pain and improving the quality of life in primary dysmenorrhea patients.

Null Hypothesis: There will be no significant difference between experimental intervention and conventional intervention on anterior Uterocervical angle and in reducing pain and improving the quality of life in primary dysmenorrhea patients.

1.7 Significance of study: The present study findings will provide evidence for whether non-invasive intervention is effective in reducing pain and improving quality of life in primary dysmenorrhea patients.

OPERATIONAL DEFINITIONS

1) Primary Dysmenorrhea **-** Primary Dysmenorrhea is one of the frequent gynecological alterations, especially in adolescents and young females. There is association of menstruation with abdominal pain, cramping, lumbago, activity limitations, and decrease in quality of life.

2) Cranial Electrotherapy Stimulation- it is a non-invasive electro medical treatment which has been shown to decrease insomnia, depression and anxiety effectively.

3) Visceral Manipulation- Visceral Manipulation is a technique used to improve the normal mobility, and motion of the viscera and the connective tissue.

REVIEW OF LITERATURE

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
Shahnaz Shahrjerdi	179	stretching exercise on primary dysmenorrhea	15-17 years	8 weeks	10-point scale	Significant decline was noted for the pain duration ($p<0.001$) and amount of pain killers used by girls with primary dysmenorrhea was decreased
MrtinuingsihMurtiningsih	174	The effect of abdominal stretching exercise on dysmenorrhea in adolescent girls.	Teenagers(13-19)	7 days	6.16 pain scale	. Result: extending practices are suggested as a persuasive path for juvenile young ladies experiencing dysmenorrhea. This activity can be another normal action for youths young ladies. Since it is extremely helpful for them
YuniPurwati	40	Effectiveness of Effleurage Massage Using Lavender Aromatherapy for Menstrual Pain Relief	17-35	2-3 days	NPS Scale	$P<0.000$ $<\alpha=0.05$. there is significant influence observed by giving effleurage massage using lavender aromatherapy to decrease dysmenorrhea
MoolRajKural	310	Menstrual characteristics and prevalence of dysmenorrhea in college going girls	18-25	5 days	VAS	Dysmenorrhea is discovered to be exceptionally pervasive among school young ladies. Family ancestry, draining term and presence of

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
						clusters were critical danger factors for dysmenorrhea
Shabnam Omidvari	1000	Primary Dysmenorrhea and Menstrual Symptoms in Indian Female	11-28 years	2-3 days per month	Numerical Pain Scale (NPS)	70% females felt pain for 1-2 days, 23% felt pain for 2-3 days during the menstrual period along with tiredness and back pain. 25% took pharmacological management, 83,% depended on non-pharmacological methods. 14% sought medical advice. So this study concluded medical attention is required on primary dysmenorrhea and there is a need for exploration. It is important that health education must consider puberty and menstruation are an important aspect for many girls in India
María Isabel Tomás-Rodez	129	Effectiveness of medical taping concept primary dysmenorrhea a two armed randomized trial	18-30	4 months during menstrual cycle	NPRS	P<0.05 for number of tablets, stomach and leg torment too.
PriyaKannana	560	Some physiotherapy treatment may	17-34	Not mentioned	VAS & QOL	Huge decreases in agony power on a 0-10 scale were noted in individual

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
		relieve menstrual pain in women with primary dysmenorrhea :systematic review		(systematic review study included in 1987 to2011)		preliminaries of Heat, TENS, Yoga
Dalia M Kamel	269	Experience of Dysmenorrhea Among a Group of Physical Therapy Students From Cairo University: An Exploratory Study	-	-	Visual analog scale (VAS)	Feminine stream (p=0.004) and occurrence of dysmenorrhea (p=0.03) as indicated by feminine routineness. Most understudies (91.2%) didn't look for clinical meeting for dysmenorrhea, and 62.4% utilized analgesics. In any case, no huge relationship (p=0.25) was found between pain relieving admission and relief from discomfort. While most understudies (90.7%) didn't miss tests, 48.7% announced helpless fulfillment with their scholarly execution in view of dysmenorrhea
Xue Wang		Moxibustion for the treatment of primary dysmenorrhea			total effective rate, visual	We hope to accumulate proof from numerous deliberate audits of suggestive improvement in

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
					analog scale scores (VAS), Cox Menstrual Symptom Scale (CMSS)	patients with essential dysmenorrhea in an open and valuable report.
Ichiro Arakawa			23 years		visual analogue scale	A probabilistic examination coming about because of 10,000-time Monte Carlo reproductions showed productivity at readiness to-pay edges in over 90% of the cycles.
Doron J. D. Rosen	28	Dysmenorrhea: A randomized controlled clinical trial evaluating a novel treatment approach		4-month	visual analog scale (0–10)	p <0.008 The new gadget is profoundly compelling in mitigating feminine agony. Rheological qualities of the menses are associated with seriousness of dysmenorrheal.
Young Jeong1	592	Polycystic ovarian morphology is associated with primary dysmenorrhea in young Korean women	23.0±4.0 years	from March 2008 to Marh 2015	VAS ultrasound	P=0.04 The mean patient age was 23.0±4.0 years, the normal period length was 34.4±23.7 days, and the normal agony force was VAS 6.7±0.1 at baseline.PCOM was surveyed by ultrasound in 54 ladies (15%). Patients with serious feminine agony were bound to have

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
						unpredictable periods (P=0.03) and hefty.
MinaleshewaBirukGebeyehu	6311	Management Practice of Dysmenorrhea among University of Gondar Students, Northwestern Ethiopia: A Cross-Sectional Study	All female students	from April 06 to May 08, 2016		More than 66% (75.3%) of the respondents were nonmedical understudies and the commonness of dysmenorrhea was 77.6%. About half (50.6%) of the members announced that they have a family background of dysmenorrhea and experienced ceaseless sort of agony (53%) which keeps going 1-2 days (47.8%). Stomach fit (70.4%), back agony (69.7%) exhaustion, and shortcoming (63.5%) were the most ordinarily experienced dysmenorrhea indications. The greater part (63%) of the respondents had experienced social withdrawal and reduction in scholarly execution (51.4%). More than 66% (63.8%) of the respondents utilize home cures as an essential administration choice.
MefkureEraslanSahin	200	The Effect of Anterior Uterocervical Angle on Primary	16 to 20 years		uterine corpus longitudinal	Results show that a smaller front uterocervical point is related with essential dysmenorrhea and illness

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
		Dysmenorrhea and Disease Severity			axis, uterine corpus transverse axis, and uterine cervix longitudinal axis	seriousness.
KusilaDeviaRahayu	68	The Relationships Between Physical Activities And Dysmenorrhea In Adolescent The City Of Bandung			Numeric Rating Scale pain scale	Connection between active work and dysmenorrhea (P = 0.000) and essentialness esteem sig <0.005. The estimation of the connection coefficient was r = - 0.650 methods there was a solid connection between factors
Aníbal A Teherán	585	WalIDD score, a new tool to diagnose dysmenorrhea and predict medical leave in university students	12-20 years (mean age is 20 years)	5-day average time span of menstrual bleeding and 1–2 days of lower abdo	WaLIDD and VRS subscales	WaLIDD scale demonstrated a decent LR +14.2 (95% CI, 13.5–14.9), LR −0.00 (95% CI, unclear), and prescient danger (OR 5.38; 95% CI, 1.78–16.2).WaLIDD score indicated a bigger impact size than the agony and medication score in the understudies. Moreover, this investigation exhibited the capacity to foresee this mix of occasions.

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
				minal pain		
Hongyue Ma	84	Altered Cytokine Gene Expression in Peripheral Blood Monocytes across the Menstrual Cycle in Primary Dysmenorrhea: A Case-Control Study	20–24 years	21–35 days		Dysmenorrhea and ordinary benchmark groups recognized 11 (nine expanded and two diminished), 14 (five expanded and nine diminished), and 15 (seven expanded and eight diminished) qualities with ≥2-crease contrast in articulation (P<0.05) in the three periods of feminine cycle, individually .
Dina Abadi Bavil	250	A comparison of physical activity and nutrition in young women with and without primary dysmenorrhea	18 - 26 years	August to late November 2015	MET scale (minutes/week)	Critical distinction between the two gatherings regarding dietary style (p = 0.008), active work (p = 0.11), however when a few factors were changed by strategic
Hongyue Ma	9	Altered Cytokine Gene Expression in Peripheral Blood Monocytes across the Menstrual Cycle in Primary Dysmenorrhea	20–24 years	(fifth day of menstruation) 4 consecutive painf	OPLS-DA method	(P 0.05) in the three periods of feminine cycle, separately. In the feminine stage, qualities encoding supportive of provocative cytokines (IL1B, TNF, IL6, and IL8) were up-directed, and qualities encoding TGF-b superfamily individuals (BMP4, BMP6, GDF5, GDF11, LEFTY2, NODAL,

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
				ul periods in the past six months		and MSTN) were down-managed youthful essential dysmenorrheic ladies shows a move yet to be determined between articulation examples of favorable to fiery cytokines and TGF-b superfamily individuals across the entire monthly cycle
Javad Setareh1	270	Assessing Efficacy of Music Therapy on Pre-Menstrual Syndrome's Severity of Symptoms	20-35 years	3 months	SCL-90R	p<0/001 Data were investigated by means of Sample Kolmogorov-Smirnov test (K-S) and Repetitive estimation test. Results, were illustrative of recognizable lessening in side effects seriousness of PMS through MT
Nilfer Sahin1	41	Assessment of anxiety-depression levels and perceptions of quality of life in adolescents with dysmenorrhea	12 -18 years	between January 2015 and July 2015	Pediatric Quality of Life Inventory (PedsQL),State-Trait Anxiety Inventory (STAI),Children's Depression	(p:0.006) higher among cases with more elevated levels of misery. In dysmenorrhea the board, it is essential to improve mindfulness among pediatric clinicians and gynecologists with respect to the relationship among dysmenorrhea and mental issues.

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
					Inventory (CDI)	
MahbobehFaramarzi 1;	450 females with or without dysmenorrhea	Association of Psychologic and Nonpsychologic Factors With Primary Dysmenorrhea	13 -19-years	between November 2012 and March 2013	Questionnaire (SSQ), depression, anxiety, stress (DAS-21), 20-item Toronto Alexithymia Scale (TAS-20), and NEO-Five Factor Inventory of Personality (NEO-FFI).	Low social help, alexithymia, neuroticism quality, long feminine dying, family background of dysmenorrhea, and high caffeine diet are significant danger factors for ladies with essential dysmenorrhea. This investigation suggested considering psychologic factors as an adjuvant to clinical dangers in assessment and treatment of essential dysmenorrhea.
HongJu	9,688 women	A U ShapedRelationship between Body Mass Indexed Dysmenorrhea: Longitudinal Study	22-27 years	13years	self-reportedquestionnaires	womenwhoremainedatnormalweightoroverweightovertime,significantriskwasdetectedforwomen who: remain edunder weight or obese(OR1.33,95%CI1.20,1.48),wereunderweightdespiteweightgain(OR1.33,95%

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
						CI1.12,1.58),becameunder weight(OR1.28,95%CI1.02, 1.61).Howeverthehigherrisk among large ladies vanished when they lost weight(OR 1.06,95%CI0.85,1.32).
TalinBabikian		Music as Medicine			World Federation of Music Therapy (WFMT):	Presented to some type of music, albeit not effectively, for ~ 40% of our waking lives,35 with this rate being up to 80% in baby years.36
Bettina Böttcher1	46 females	Behavioral and neural responses to aversive visceral stimuli in women with primary dysmenorrhea	<18 - >45 years	days 1–5 of the menstrual cycle	Ratings of perceived intensity were accomplished with visual analogue scales (VAS).	(p < 0.01, surveyed with the West Haven-Yale Multidimensional Pain Inventory), there were no contrasts between bunches invisceralsensitivityandmeantrial-by-trialVASratingswerevirtuallyidentical.Analysis ofneuralresponsesrevealed activationinbrainregionspreviouslyshowntobeinvolvedin theprocessingofvisceralstimuliwithdifferencesbetweenpainfulandmildlypainfulstimulation,

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
Chen X. Chen	Women 5,07,328 and men 1,13,888	Big Data and Dysmenorrhea: What Questions Do Women and Men Ask About Menstrual Pain?	13–50 years	Time not mentioned	WAG modeling, Cluster Descriptions and Supporting Examples from Female Queries	Dysmenorrhea side effects and the executives. Among female questions, there were particular points on moving toward feminine torment at school and feminine torment related conditions; while among male inquiries, there was an unmistakable bunch of questions on feminine torment from male's viewpoints. Discoveries might be helpful in organizing the substance and illuminating the conveyance stage for instructive mediations.
Dimitrios mavrelos and Ertan saridogan	Not mention	Treatment options for primary and secondary dysmenorrhea	20–24 years	8–72 hours during menses	Normal pelvic ultrasound	50–70% of youngsters who don't react to clinical medicines with NSAIDs and the consolidated oral prophylactic have pelvic endometriosis18 and such patients will profit by expert survey.
Zhiqiang Li1	6,770	Common variants in ZMIZ1 and near NGF confer risk for primary dysmenorrhoea	Adolescent girl		GWAS, Genotyping and quality control (QC). and SNPs	(Po5108) relationship at rs76518691 in the quality ZMIZ1 and at rs7523831 close to NGF. ZMIZ1 has recently been related with a few immune system illnesses, and NGF assumes a vital part in the age of agony and hyperalgesia

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
						and has been related with headache
R. Andrew Moore	200 participants	Diclofenac Potassium in Acute Postoperative Pain and Dysmenorrhoea: Results from Comprehensive Clinical Trial Reports	40-Years or more	2013-2014	VAS, Five-point categorical pain relief (PR) scales, Four-point categorical pain intensity (PI)	Result was to produce more noteworthy trust in the estimation of the diclofenac potassium detailing to treat intense difficult conditions.
Sharefah Al-Matouq	763	Dysmenorrhea among high-school students and its associated factors in Kuwait	16-21 years	one-year	face-to-face interview with a structured questionnaire	(p-value=0.005),regularity and stream of the feminine period (p-value=0.025, p-value=0.009; separately), and drinking espresso (p-value=0.004) were essentially connected with dysmenorrhea in multivariable examination.
Hussein Mohammed (HM)	693	Dysmenorrhea and Associated Factors among Secondary School Students in East Hararghe Zone, Eastern Ethiopia	<20 years	April to May 2017	self-reported questionnaire	Dysmenorrhea adversely influenced the understudies' everyday life. This concentrate additionally indicated that, solitary 4.2% of the understudies with dysmenorrhea were counseled medical services supplier. ily exercises

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
Tasuku Harada	Adolescent group	Dysmenorrhea and Endometriosis in Young Women	15–25 years old dysmenorrhea Over 30 years old	Within 3 years Secondary dysmenorrhea More than 5 years		. LEP and laparoscopic medical procedure are therapies of decision for youthful patients with endometriosis. Endometriosis is a troublesome illness to oversee because of its constant and repetitive nature. Long haul the executives, with uncommon consideration regarding protection of ovarian capacity, is exceptionally significant in treating young ladies with endometriosis.
Vincenzo De Sanctis1	41,140	Dysmenorrhea in adolescents and young adults: a review in different countries	19-21 years	from 2010 to August 2015	VAS and linear analogue scale and Multi-dimensional Scoring system (MSS)	One examination announced that feminine agony was identified with pressure, high temperature and dampness, a The relationship among's age and different levels of dysmenorrhea was discovered to be measurably critical ($\chi 2 = 5.32$; $p < 0.05$). The most elevated level of the members (32%) were 21 years old followed by 20 years (29%) and afterward 22 years (16%) About half of understudies (53.7%-47.4%) announced a family background of

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
						dysmenorrhea (Table 1, no. 16, 24, 28, 33 and 46). At the point when strategic relapse examination was done, the danger of dysmenorrhea was 0.97 occasions lower as age in wrinkled (p <0.006) (Table 1, no. 50). In another investigation, univariate strategic relapse examination demonstrated that eating chocolate, utilizing oral prophylactic pills, age from the outset monthly cycle, feminine recurrence, and sister's dysmenorrhea status influenced members' dysmenorrhea status (p<0.05). The multivariate strategic relapse model indicated that those whose sister experienced dysmenorrhea were 0.2 occasions bound to encounter dysmenorrhea, BMI and number of births
SumonaSaha	118	Dysmenorrhea in Women with Crohn's Disease: A Case-Control Study	18 to 48-years	3 -years	Crohn's Disease Activity Scores, Health-Related Quality of Life,	In ladies without dysmenorrhea, we found that more controls utilized agony relievers for feminine torment (p=0.002). There was no huge distinction in agony prescription utilization of

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
					Menstrual Distress Questionnaire score, Dysmenorrhea prevalence, a 0 to 10 scale	any sort for feminine torment among cases and controls with dysmenorrhea; nonetheless, controls with dysmenorrhea utilized a greater number of NSAIDS than did cases (p=0.001).
Rose Mary Nakame1	351	Dysmenorrhoea among students aged 18–45 years attending University in Uganda: A cross-sectional multicenter study of three Universities in Uganda	18–45 years	2009 to 2015	self-administered questionnaire	Respondents (N = 351) completely finished the examination out of 383 welcomed members. The pervasiveness of dysmenorrhoea was 75.8%. Related elements included having youngsters (p < 0.05), every day utilization of sweet nourishments (p < 0.05) and family background of dysmenorrhoea (p < 0.01).
Eman m. El-bably	30	Effect of Pilates Exercise on Primary Dysmenorrhea	18-23 years	from December 2017 to May 2018	Visual Analogue Scale (VAS) and plasma cortisol level	The outcomes uncovered a critical decline in power of agony and plasma cortisol levelfor the two gatherings (A also, B) after the treatment program (study gathering, p<0.001 and 0.001 and control gathering, p=0.033 and 0.036) individually however for bunch A. There was a

STUDY	SAMPLE SIZE	INTERVENTION	AGE	DURATION	OUTCOME	RESULT
						positive connection between's force of agony and the plasma cortisol level of pretreatment esteems where the r-esteem approaches (+0.571) with related Probability estimation of (0.001).
Alaettin unsal1	623	Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students	17–30 years	15 March and 15 April 2009	10-point visual analog scale.	A decrease with increasing severity of dysmenorrhea (P <0.05, for each one). Dysmenorrhea is a common health problem, having negative effects on the HRQoL among university female students.
Sayako Akiyama1	309	Treatment preferences among Japanese women with dysmenorrhea: results from a discrete choice experiment study	18–49 years	6-months	DCE method	(P, 0.001 for all). Those with prior hormonal therapy experience exhibited the same pattern. Mode of administration factored heavily in dysmenorrhea treatment preferences. Women of reproductive age preferred oral medication, especially twice-daily regimen and once-daily fixed cyclic regimen.

METHODOLOGY

Ethical clearance: Ethical clearance will be provided by the Institutional Ethics Committee of Maharishi Markandeshwar (Deemed to be University), Mullana, Haryana and study will be conducted in accordance to Helsinki declaration revised 2013 and National Ethical Guidelines for Biomedical Research involving human participants, 2017.

Study Design: Randomized Controlled trial.

Permuted Block Randomization:

Two groups' pre-post test study will be conducted as single blind study (Participants are kept ignorant of their group assignment) and patients will be randomly allocated to intervention and control group using block randomization. Randomization reduces opportunities for bias and confounding in experimental designs, Random allocation will be made with 20 blocks with block length Four and N=80.

Study duration: 1 Year and 6 months

Study Location: MM (DU) Mullana Ambala Haryana Ambala.

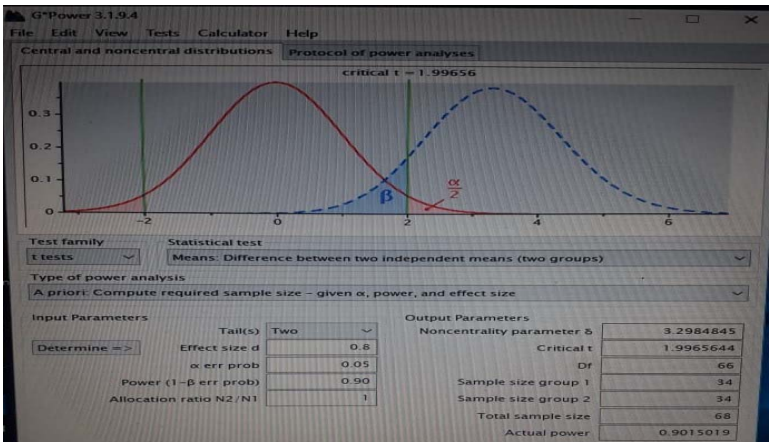
Study Setting: Gynecology Outdoor patient MMIMSR and Physiotherapy Outdoor patient (General OPD) MMIPR.

Study Sample: Convenience Sampling. (Willing participant allocated in each group 40+40)

Sample size: Effect size=mean pre 7.52- –mean post 5.53 /SD, pooled SD $\sqrt{(s_1)^2 + (s_2)^2}$ /2

SD pool=2.26.

ES=0.8 by putting this in G Power sample size=68, 15% drop out 11, Total no =79.



Patients (dropout rate was calculated using G-power software taking the values (4)

Subjects Selection Criteria:

Inclusion Criteria

Medical, Physiotherapy and Nursing female students of regional medical university.

1. Age group 18-35 years
2. Willing Participants
3. Participants diagnosed with primary dysmenorrhea according to pathos-physiology of dysmenorrhea.

Exclusion Criteria

1. Hypertension, Diabetes, any other chronic disease
2. Secondary Dysmenorrhea.
3. Any Neurological and Cardiological disorder.
4. Irregular periods

Apparatus and Equipment:

Couch, Diagnostic ultrasound machine, weighing machine, Height chart, International physical activity questionnaire, Depression anxiety scale ($DASS_{21}$) and Visual Analogue scale (VAS).

Investigation Tools/Outcome:

Primary outcome measures: By gynecologist examination to diagnose Primary dysmenorrheal cases: History of menstrual pain that interferes with daily living activities and quality of life , Beginning in adolescent , pain intensity with menstrual period time, Inconsistent History, Physical finding of a Pelvic mass, abnormal vaginal discharge, Pelvic tenderness.

By Radiologist: measurement of Anterior Uterocervical angle with the Diagnostic ultrasound (EPIQ 7G, C51PHILIPS L18:5 C18:3V).

Secondary outcome measures: Visual analogue scale(VAS) according to MCID value a clinically significant reduction in menstrual pain intensity of around 25 mm on a 100 mm VAS Quality, Depression anxiety scale($DASS_{21}$) and International Physical activity questionnaire.

Proposed- Methodology

1st Step-(Medical, Physiotherapy and Nursing female students will be the participant of study) menstrual history and physical activity level will be taken by primary researcher using International Physical activity questionnaire and participants with Premenstrual symptoms will be sent to Gynecological OPD for further evaluation.

2nd Step-Gynecologist will examine the patient to diagnose primary dysmenorrhea cases and will refer to the radiology department for further investigation.

Inclusion group (n=)
Exclusion group (n=)

3rd Step-Radiologist will identify primary dysmenorrhea patients with the help of diagnostic ultrasound and exclude the secondary dysmenorrhea patients. Radiologist will take measurement of Uterocervical angle of uterus on 2nd day of menstrual cycle with the help of diagnostic Ultrasongraphic machine Diagnostic ultrasound (EPIQ 7G, C51PHILIPS L18:5 C18:3V)

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Pre assesment-**4th Step-** Patient will be referred to the physiotherapy department. The primary researcher will take pre assessment of all participants with the help of Visual Analogue scale (VAS), Depression anxiety scale ($DASS_{21}$), International Physical activity questionnaire. (n=68) participants will be randomly allocated to intervention and control group.

5th Step-
Experimental Intervention group
Received treatment – Non-invasive intervention will be provided for 4 months, starting 2 days before the expected date of menstruation and 1 week of protocol will be provided every month along with home exercise program

6th Step
Control group
A conventional intervention will be provided for 4 months, 2days before the date of menstruation with1week of protocol every month.

Post assessment-7th Step-After 4months of treatment a physiotherapist will take a post assessment with the help of Visual Analogue scale (VAS), Depression, anxiety scale ($DASS_{21}$) and International Physical activity questionnaire.

8th step-Than Radiologist will take measurement of Uterocervical angle of uterus on 2nd day of menstrual cycle with the help of diagnostic Ultrasonography machine Diagnostic ultrasound (EPIQ 7G, C51PHILIPS L18:5 C18:3V)

TREATMENT PROCEDURE

Table 1: Experimental Intervention group

Treatment provided by Researcher	Standard protocol. Core strengthening exercise (pelvic bridging, plank, cat and camel). Deep breathing exercise, Music therapy-in supine position (for 30 min).Quadratus lumborum stretching and Quadriceps & Hamstring stretching	Visceral manipulation uterus mobilization for 10 minutes.	Cranial electrotherapy stimulation-in supine position (for 30 minutes). Mode: 2 Current intensity = 1 mA Current Density = 5μA/cm^2 Pulse duration = Auto adjustable (1-5ms)

Table 2: Control group

Conventional Intervention: Home Program given to Patient by un-semi-supervision of	Core strengthen exercise (5+5+5 repetitions for each exercise with 30 sec hold) (pelvic	Music therapy-in supine position (for 30 min)(till the day one of next menstruation 7	Deep breathing exercise-first inhale then hold for 10 seconds and then exhale (for	Quadratus lumborum stretching and Quadriceps & Hamstring stretching

researcher.	bridging, plank, cat and camel).	days raga Malakauns and Yaman by flute will be used for music therapy)	10 min with cross legs and back straight).	(5+5+5 repetitions for each exercise with 45 sec hold).

Discussion; The present study will show prevalence of Primary dysmenorrhea among medical, Nursing, Physiotherapy Students and also effectiveness of Non-invasive intervention on Primary dysmenorrheal patients.

Clinical Significance: Previously studies have been conducted to evaluate role of TENS, Stretching, core strengthen, Massage etc. on Primary dysmenorrhea. The studies are limited both in quantity and quality. A specific conservative management of Primary dysmenorrhea is unknown. The present study will help to formulate a non- invasive treatment plan for primary dysmenorrheal patients addressing both mental and physical issues associated with the condition.

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PLAGIARISM REPORT

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